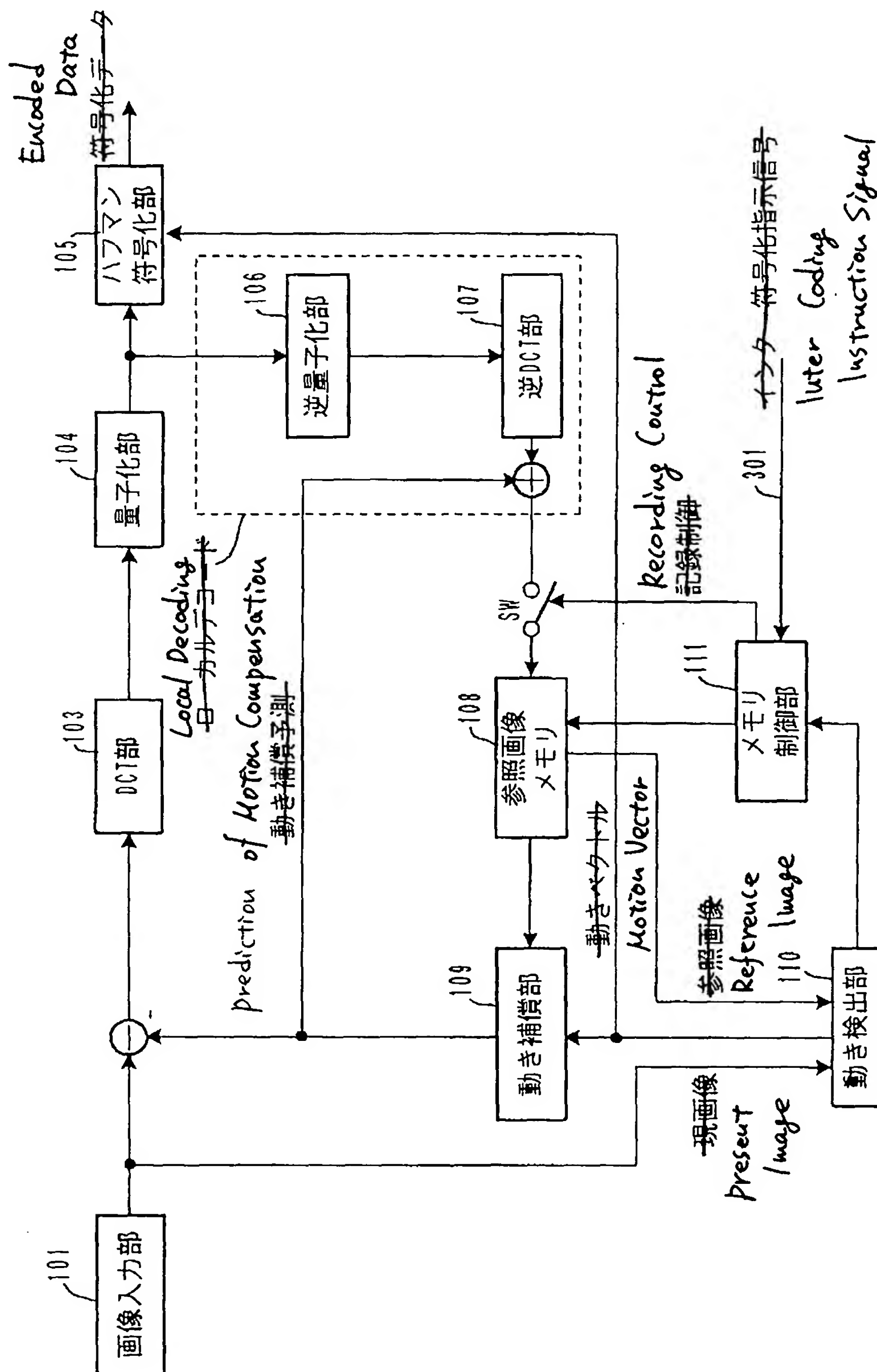


Fig. 3



- | | | | |
|-----|------------------|-----|------------------------|
| 101 | Image Input Unit | 107 | Reverse DCT Unit |
| 103 | DCT Unit | 108 | Reference Image Memory |
| 104 | Quantizer | 109 | Motion Compensator |
| 105 | Huffman Encoder | 110 | Motion Detector |
| 106 | Dequantizer | 111 | Memory Controller |

~~図4~~ Fig. 4

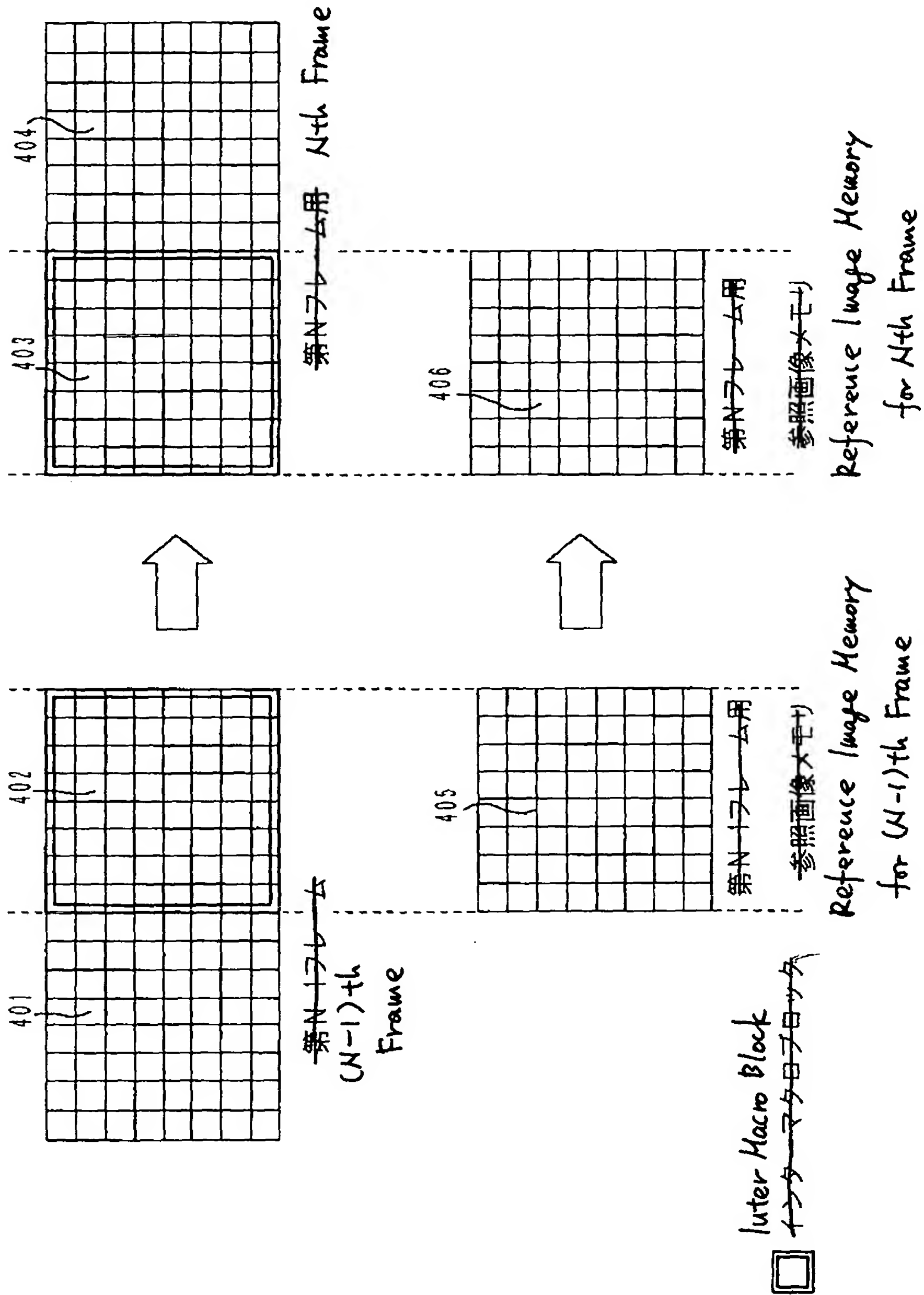


Fig. 6

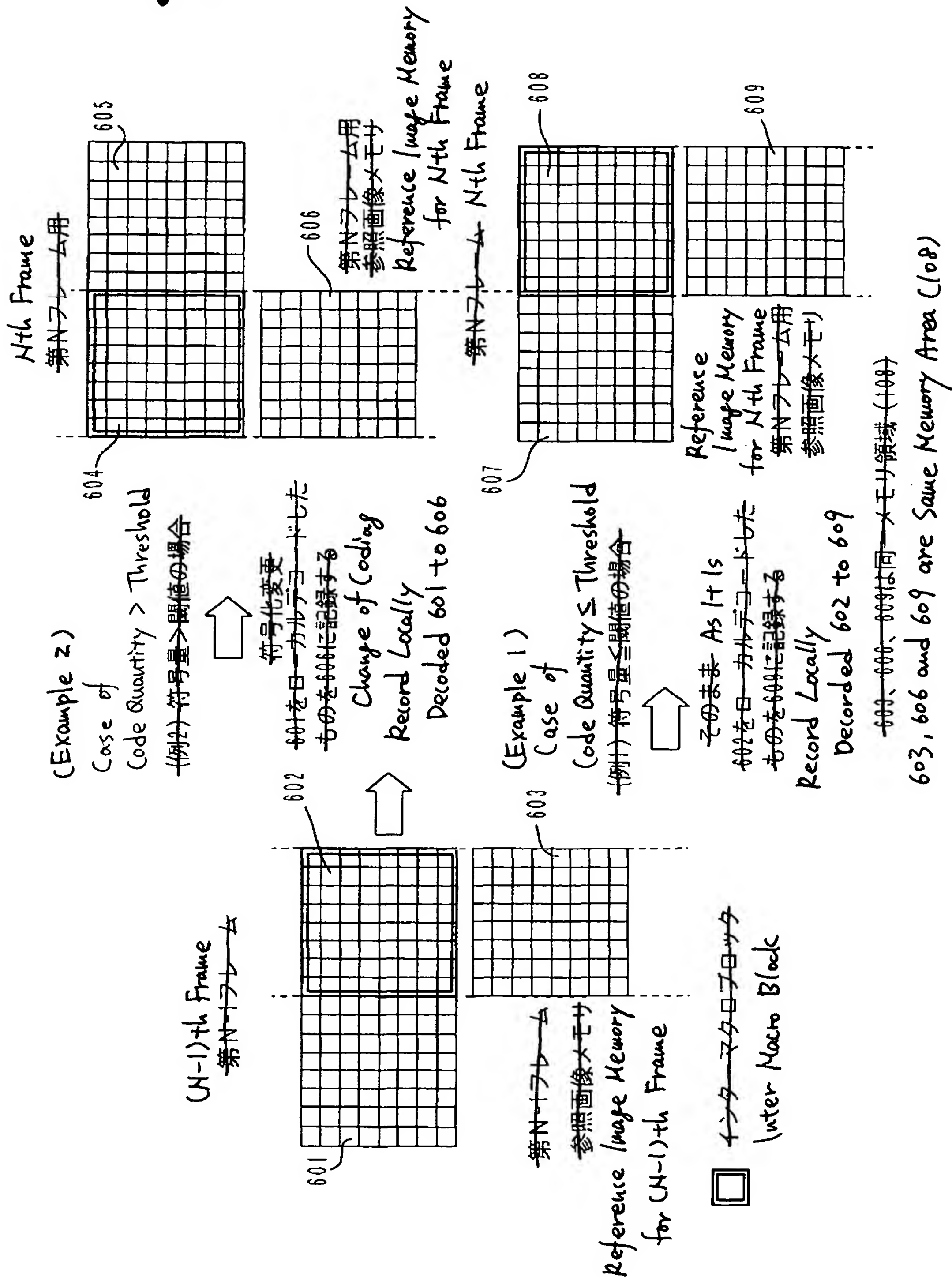


Fig. 8

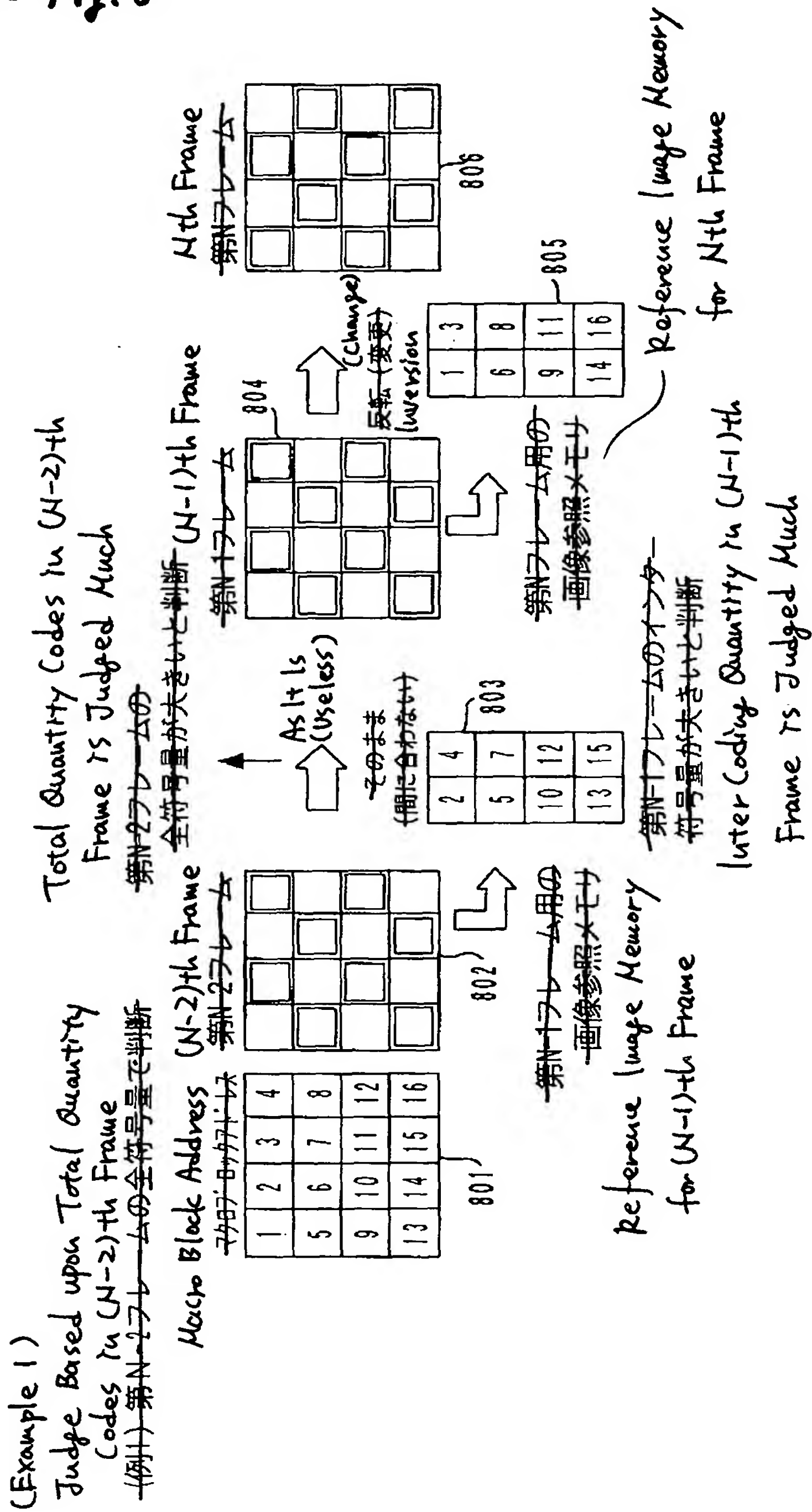
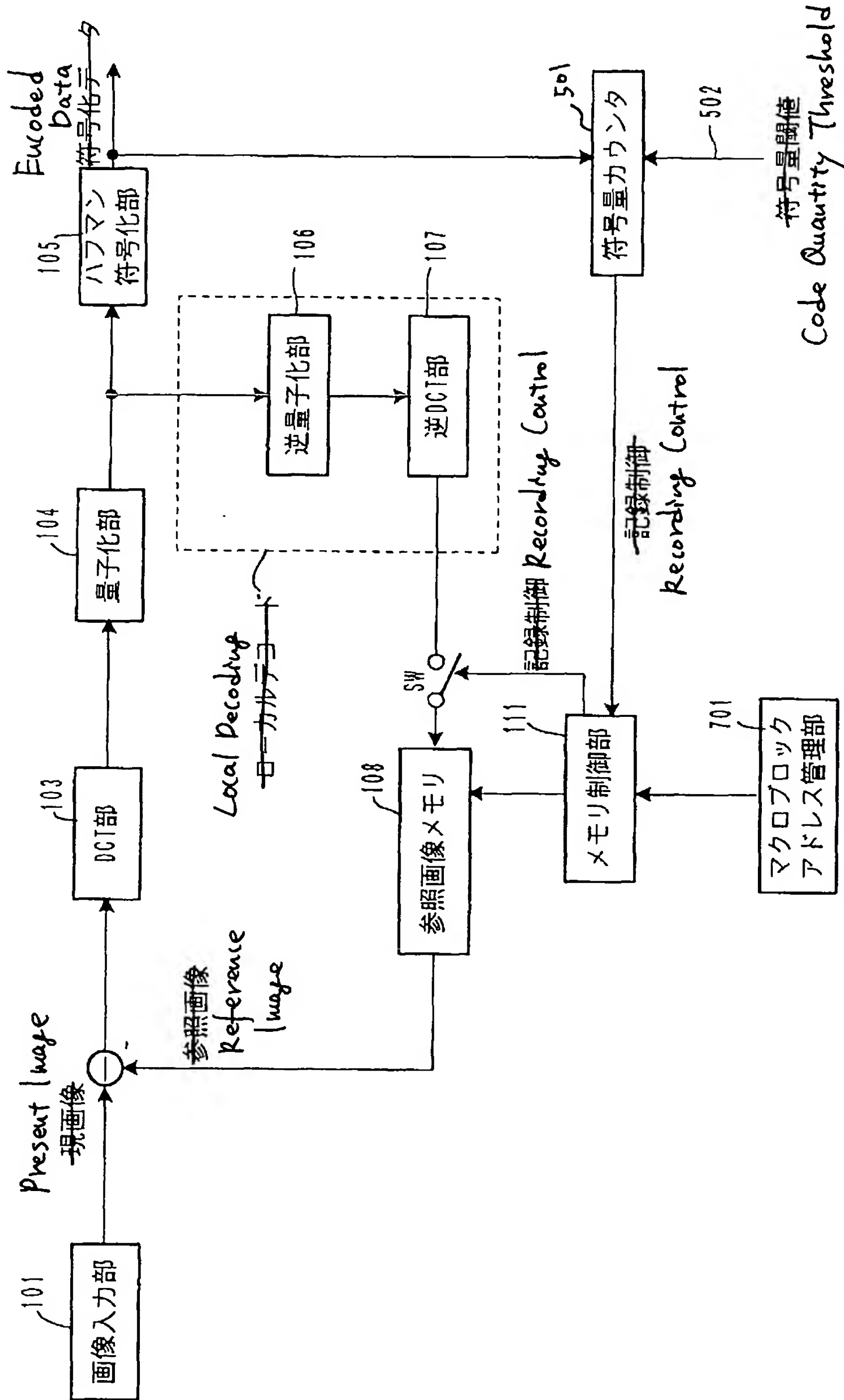


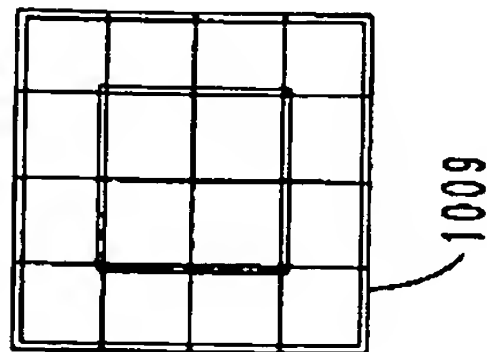
Fig. 9



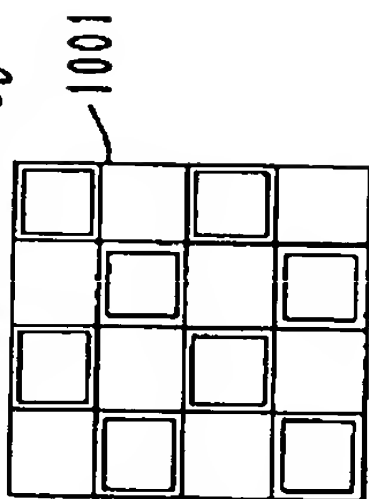
- | | | | |
|-----|------------------|-----|-----------------------------|
| 101 | Image Input Unit | 108 | Reference Image Memory |
| 103 | DCT Unit | 109 | Motion Compensator |
| 104 | Quantizer | 110 | Motion Detector |
| 105 | Huffman Encoder | 111 | Memory Controller |
| 106 | Dequantizer | 501 | Code Quantity Counter |
| 107 | Reverse DCT Unit | 701 | Macro Block Address Manager |

~~図10~~ Fig. 1

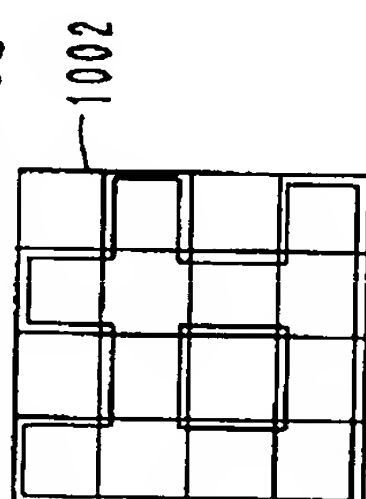
Center High
Image Quality Type
(5) 中央高画質型



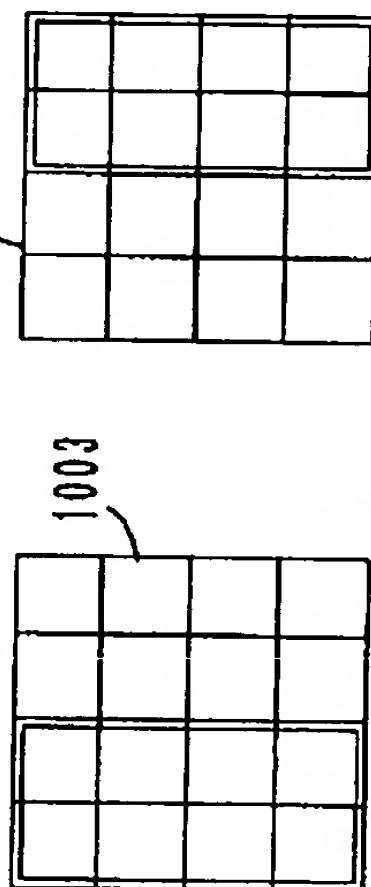
(1) ~~千鳥型~~ Staggered Type



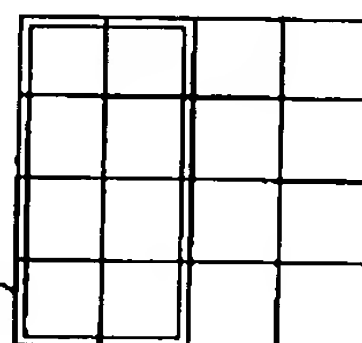
(2) ~~格子型~~ Lattice Type



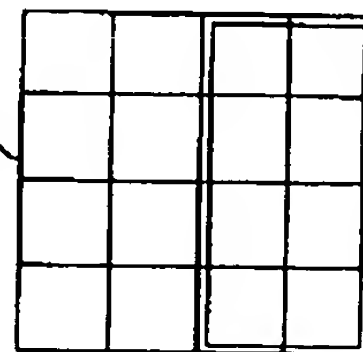
(3) ~~分割型~~ Division Type



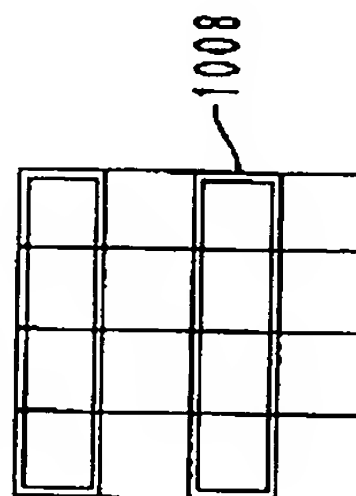
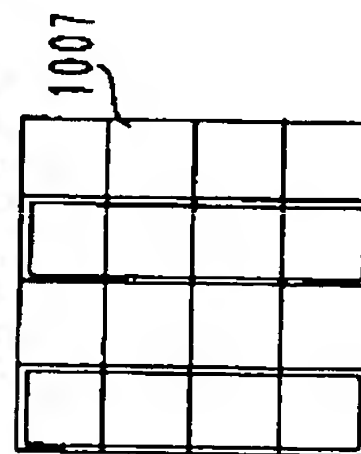
1005



1006



(4) ~~ストライプ型~~ Stripe Type



Intra Macro Block
~~イントラマクロブロック~~
Inter Macro Block
~~インタマクロブロック~~



Intra Macro Block

Inter Macro Block

The diagram illustrates a video processing system with the following components and connections:

- 101 画像入力部 (Image Input Unit):** Receives the **現画像 (Present Image)** and outputs it to the **動き検出部 (Motion Detection Unit)** and the **動き補償部 (Motion Compensation Unit)**.
- 動き検出部 (Motion Detection Unit):** Outputs a **動きベクトル (Motion Vector)** to the **動き補償部**.
- 動き補償部 (Motion Compensation Unit):** Receives the **動きベクトル** and outputs a **予測補償信号 (Prediction Compensation Signal)** to the **DCI部 (DCI Unit)**.
- DCI部 (DCI Unit):** Receives the **予測補償信号** and outputs a **DCI信号 (DCI Signal)** to the **量子化部 (Quantization Unit)**.
- 量子化部 (Quantization Unit):** Receives the **DCI信号** and outputs a **量子化データ (Quantized Data)** to the **逆量子化部 (Inverse Quantization Unit)**.
- 逆量子化部 (Inverse Quantization Unit):** Receives the **量子化データ** and outputs a **逆DCI信号 (Inverse DCI Signal)** to the **逆DCI部 (Inverse DCI Unit)**.
- 逆DCI部 (Inverse DCI Unit):** Receives the **逆DCI信号** and outputs a **逆DCIデータ (Inverse DCI Data)** to the **ハフマン符号化部 (Huffman Coding Unit)**.
- ハフマン符号化部 (Huffman Coding Unit):** Receives the **逆DCIデータ** and outputs **符号化データ (Encoded Data)**.
- 記録制御部 (Recording Control Unit):** Receives the **符号化データ** and outputs a **記録制御信号 (Recording Control Signal)** to the **メモリ制御部 (Memory Control Unit)**.
- メモリ制御部 (Memory Control Unit):** Receives the **記録制御信号** and outputs a **メモリ制御信号 (Memory Control Signal)** to the **参照画像メモリ (Reference Image Memory)**.
- 参照画像メモリ (Reference Image Memory):** Receives the **メモリ制御信号** and outputs a **参照画像 (Reference Image)** to the **動き検出部**.
- マクロブロックアドレス管理部 (Macroblock Address Management Unit):** Receives the **参照画像** and outputs a **マクロブロックアドレス (Macroblock Address)** to the **動き検出部**.
- 動き検出部 (Motion Detection Unit):** Receives the **マクロブロックアドレス** and outputs a **動きベクトル (Motion Vector)** to the **動き補償部**.
- 動き検出部 (Motion Detection Unit):** Receives the **動きベクトル** and outputs a **動きベクトル (Motion Vector)** to the **動き補償部**.
- 動き検出部 (Motion Detection Unit):** Receives the **動きベクトル** and outputs a **動きベクトル (Motion Vector)** to the **動き補償部**.
- 動き検出部 (Motion Detection Unit):** Receives the **動きベクトル** and outputs a **動きベクトル (Motion Vector)** to the **動き補償部**.

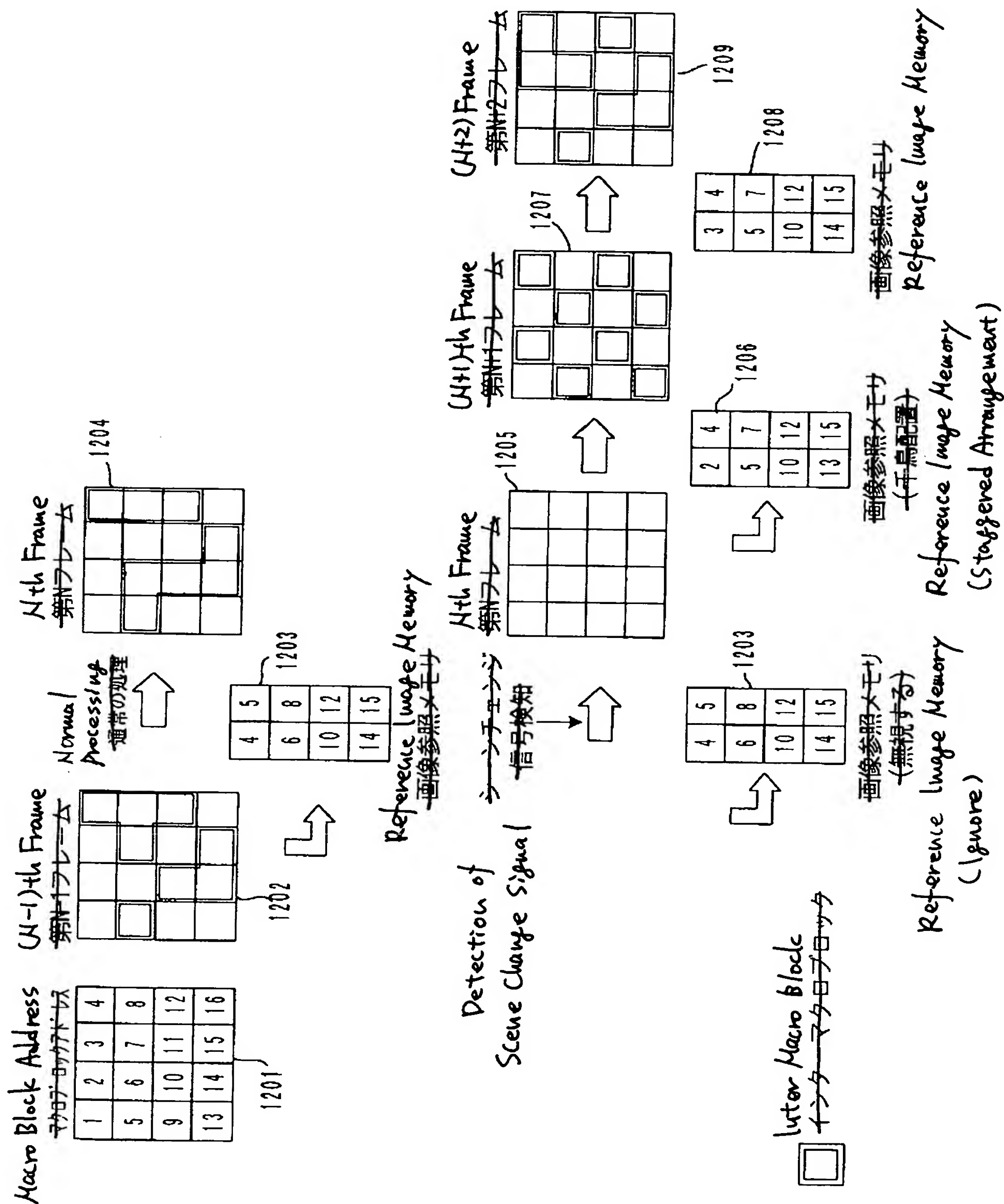
Handwritten annotations include:

- Local Decoding:** A dashed box around the **逆量子化部** and **逆DCI部**.
- Prediction of Motion Compensation:** A label for the **動き補償部**.
- Compare Code Quantity and Threshold And Output Scene Change Signal In The Case Quantity Exceeds Threshold:** A label for the **符号量カウンタ (Code Quantity Counter)**.
- Scene Change Signal:** A label for the **シーンチェンジ信号 (Scene Change Signal)**.
- Scene Change Threshold:** A label for the **シーンチェンジ閾値 (Scene Change Threshold)**.
- Provide Scene Change Signal From External:** A label for the **外部からシーンチェンジ信号を与える (Provide Scene Change Signal From External)**.

- | | |
|-----|------------------|
| 101 | Image Input Unit |
| 103 | DCT Unit |
| 104 | Quantizer |
| 105 | Huffman Encoder |
| 106 | Dequantizer |
| 107 | Reverse DCT Unit |

- | | |
|------|-----------------------------|
| 1108 | Reference Image Memory |
| 1109 | Motion Compensator |
| 1110 | Motion Detector |
| 1111 | Memory Controller |
| 1501 | Code Quantity Counter |
| 1701 | Macro Block Address Manager |

~~図12~~ Fig. 12



~~【图 13】~~ Fig. 13

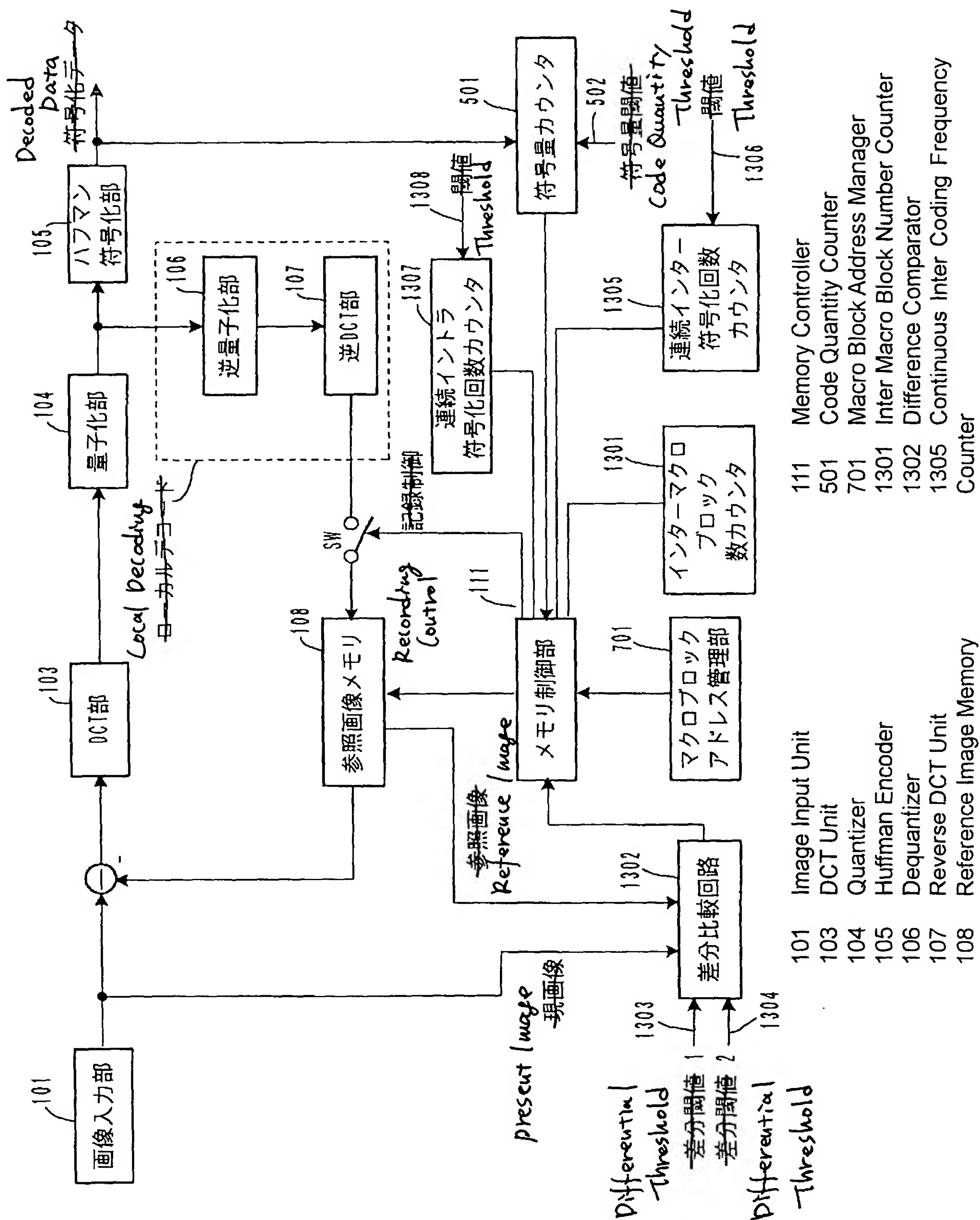
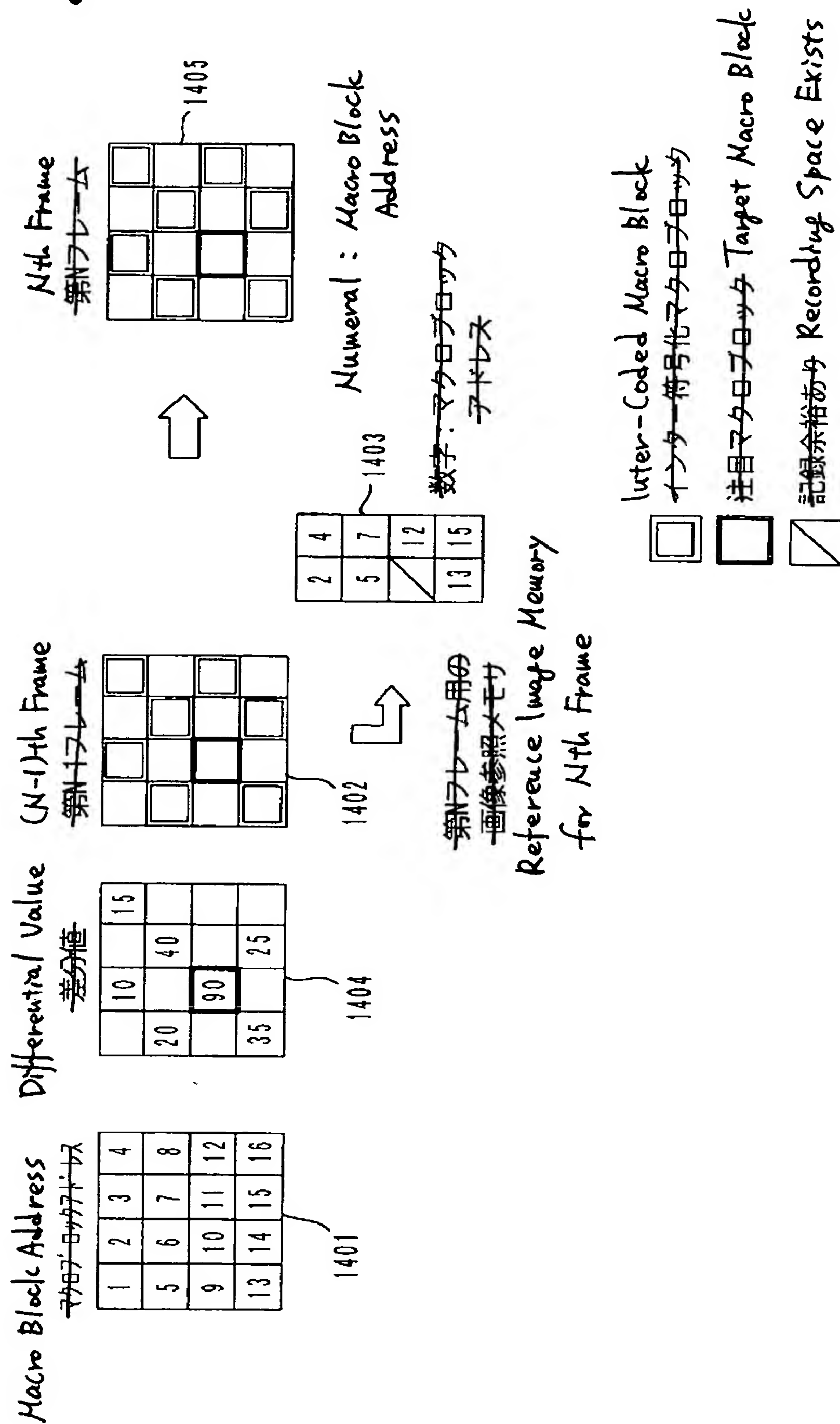


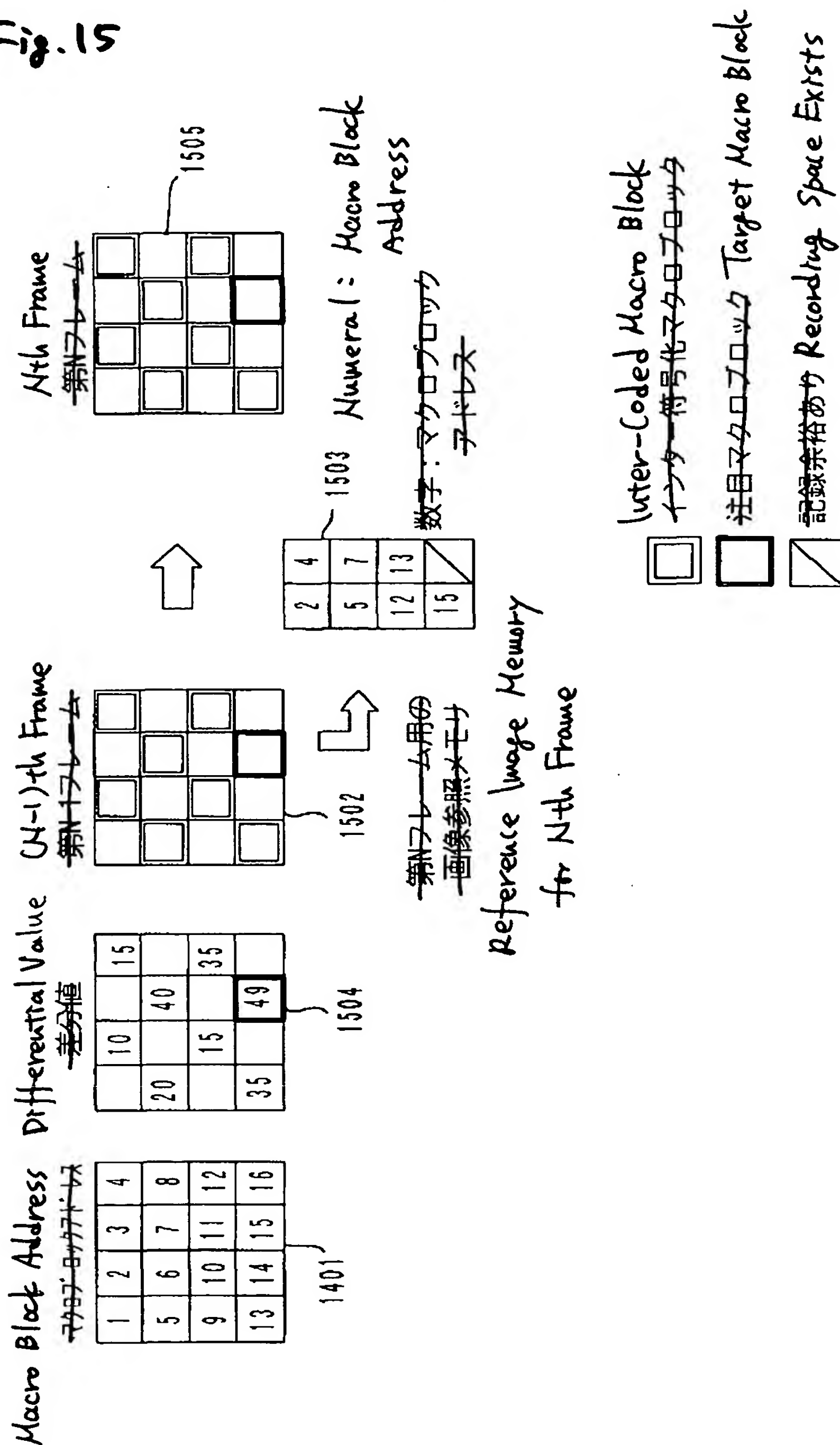
Fig. 14

(Example 1) Differential Threshold = 50

(例) 差分閾値 = 50



(Example 2) Differential Threshold = 50

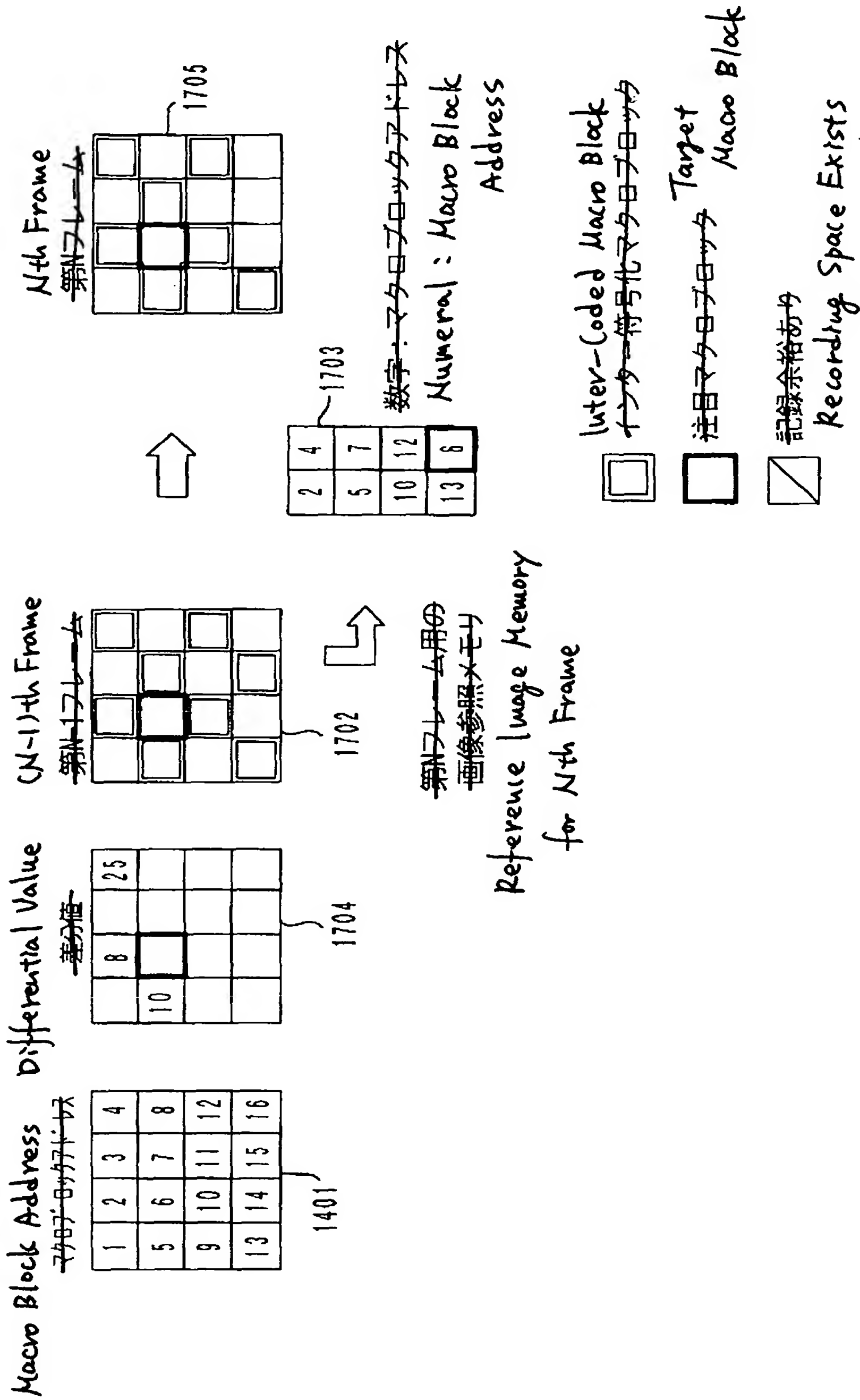
~~(例2) 差分閾値=50~~

Proof - 2003/03/04

図 17 Fig. 17

(Example 4) Differential Threshold $3 = 15$

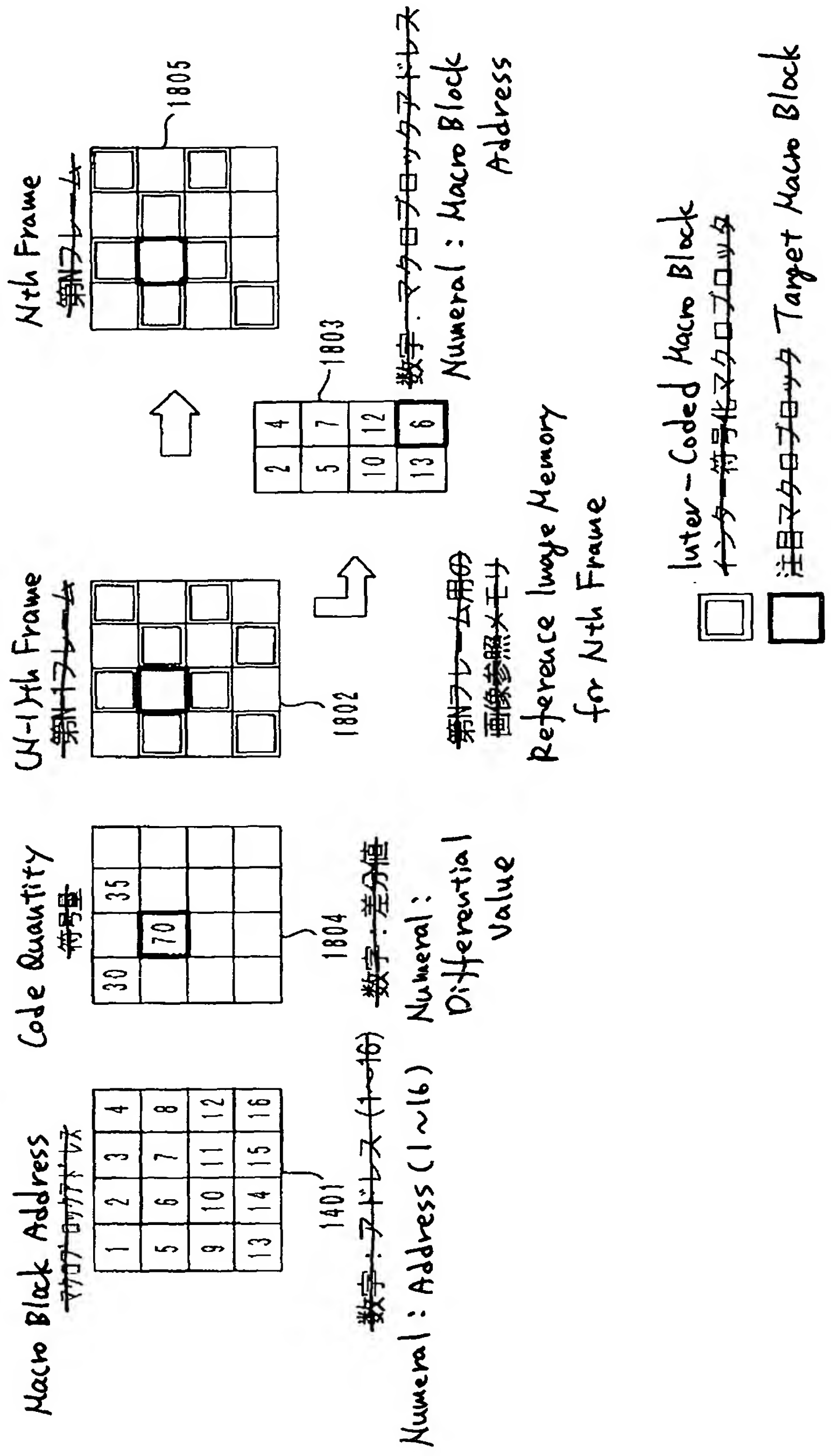
(例4) 差分閾値 $3 = 15$



~~図18~~ Fig. 18

(Example 5) Code Quantity Threshold = 50

~~(例5)~~ 符号量の閾値 = 50



~~図19~~ Fig.19

(Example 6) Intra Coding Frequency Threshold = 5

~~(例6) インタ符号化回数~~の閾値 = 5

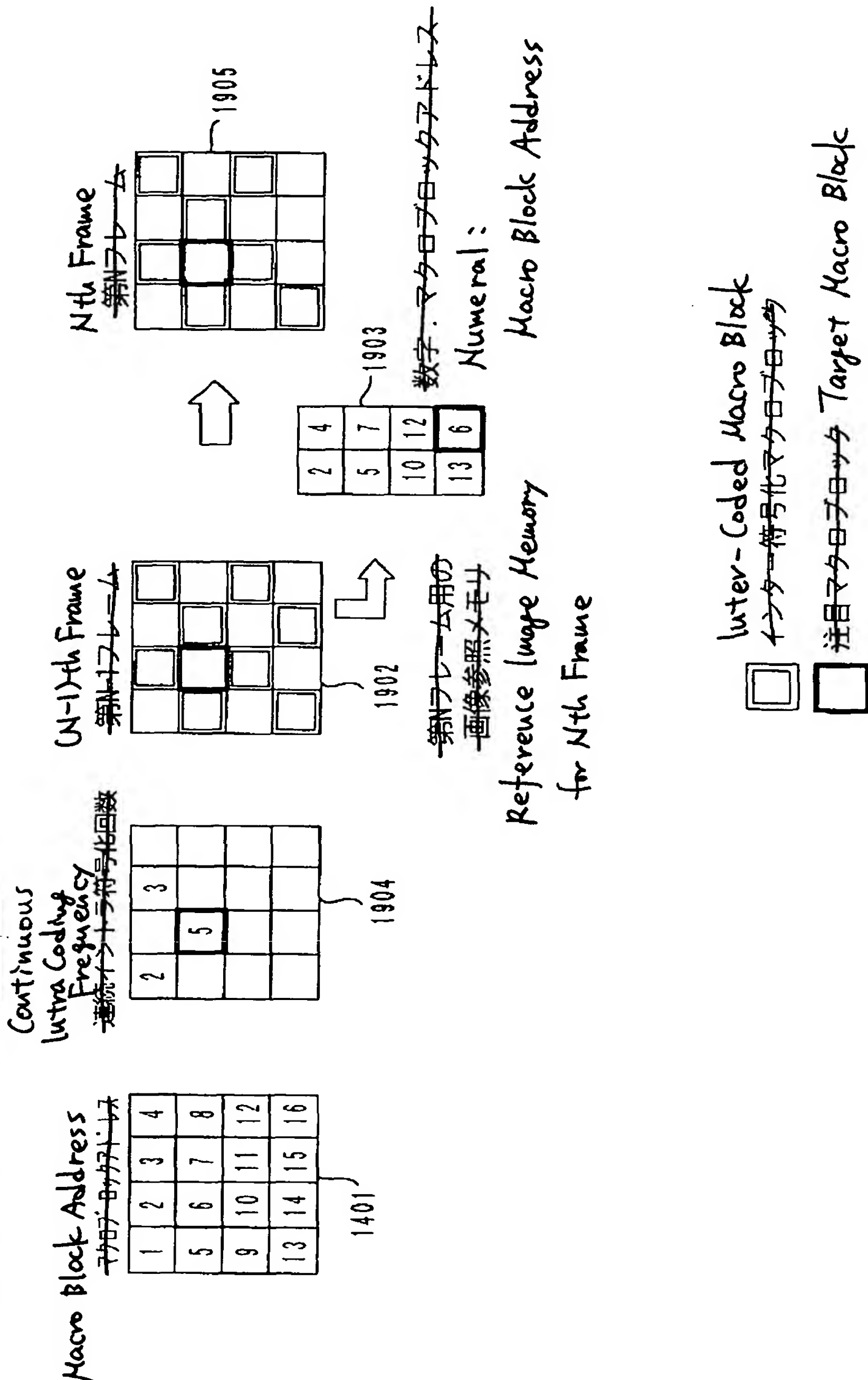
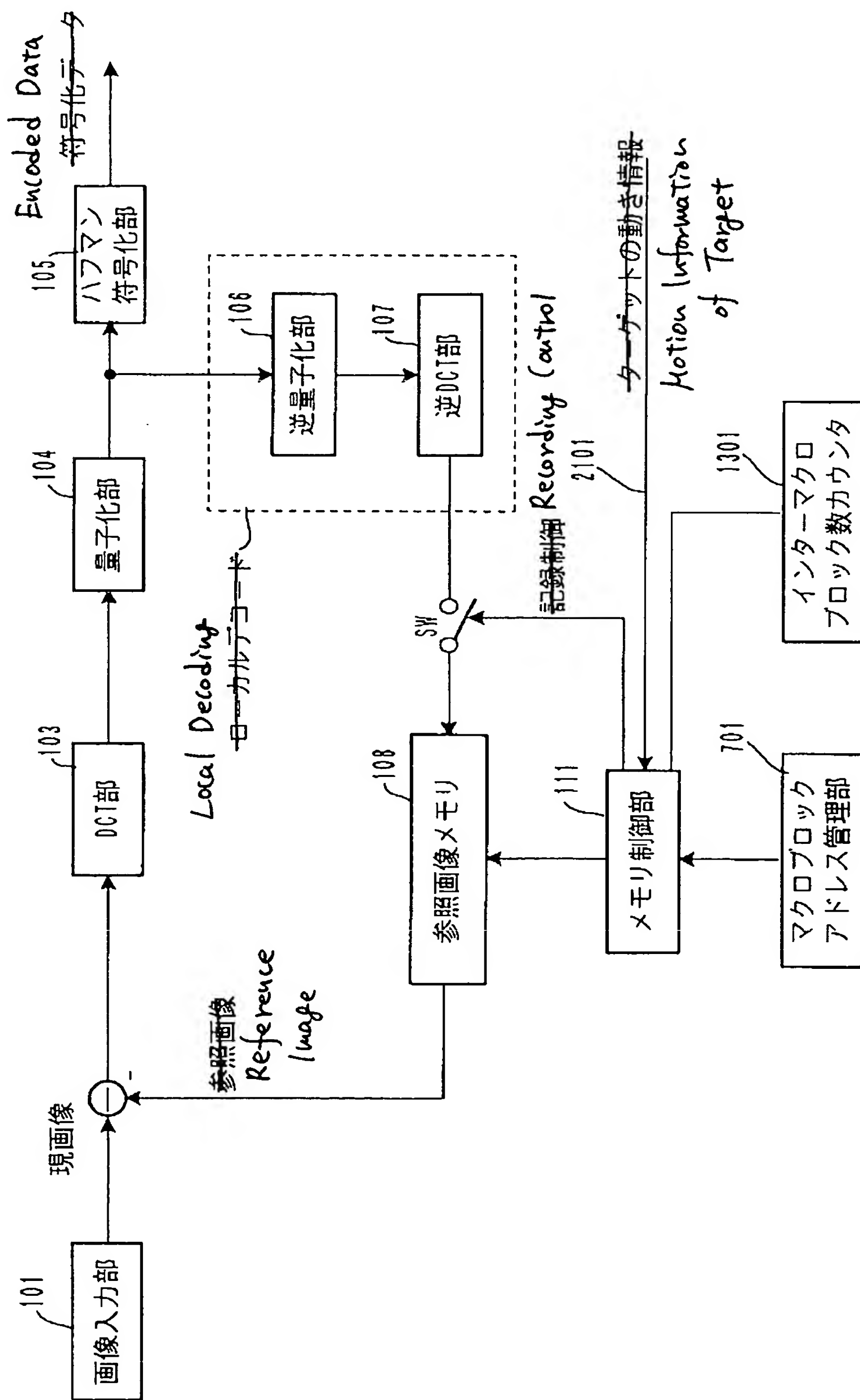
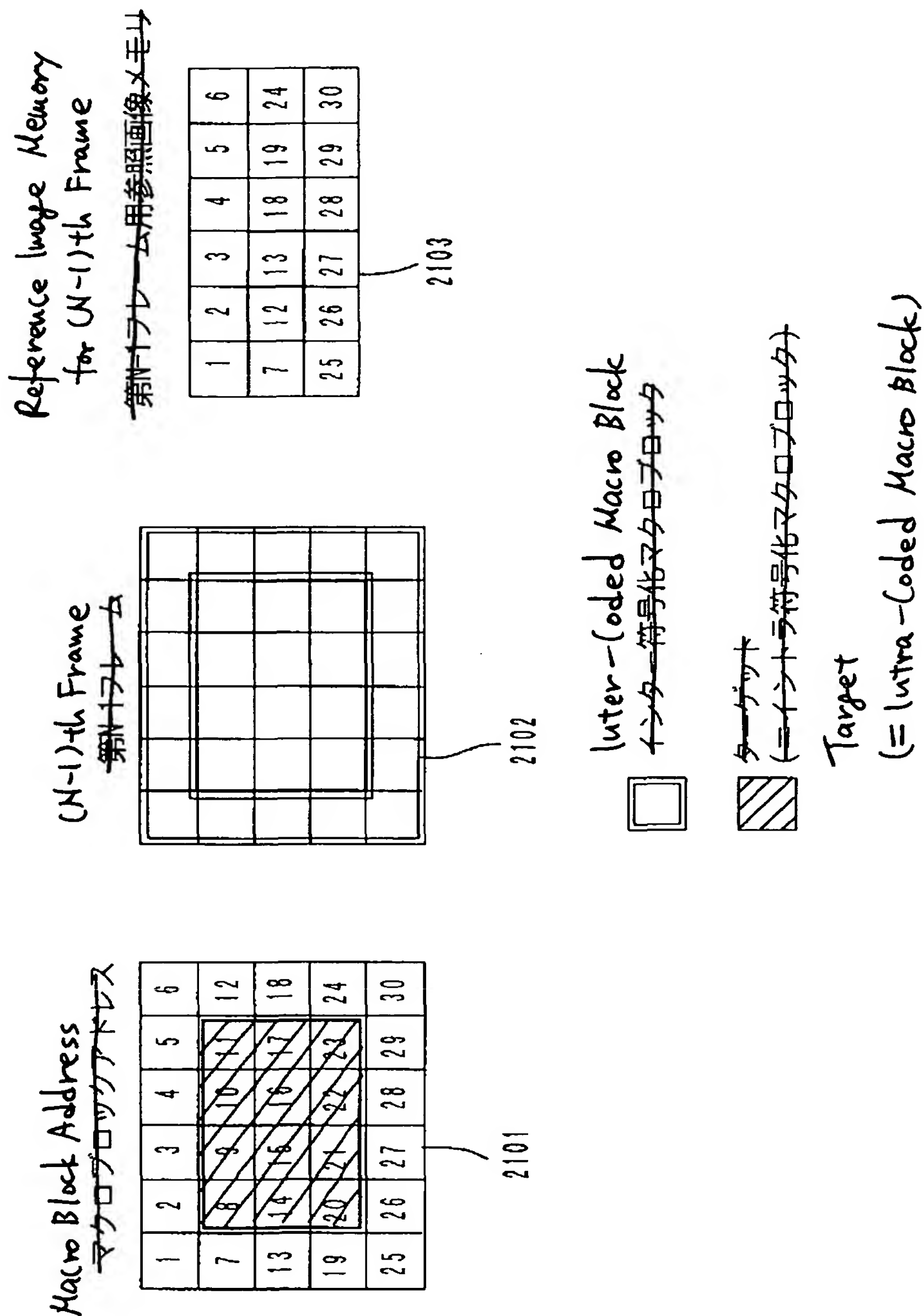


Fig. 20

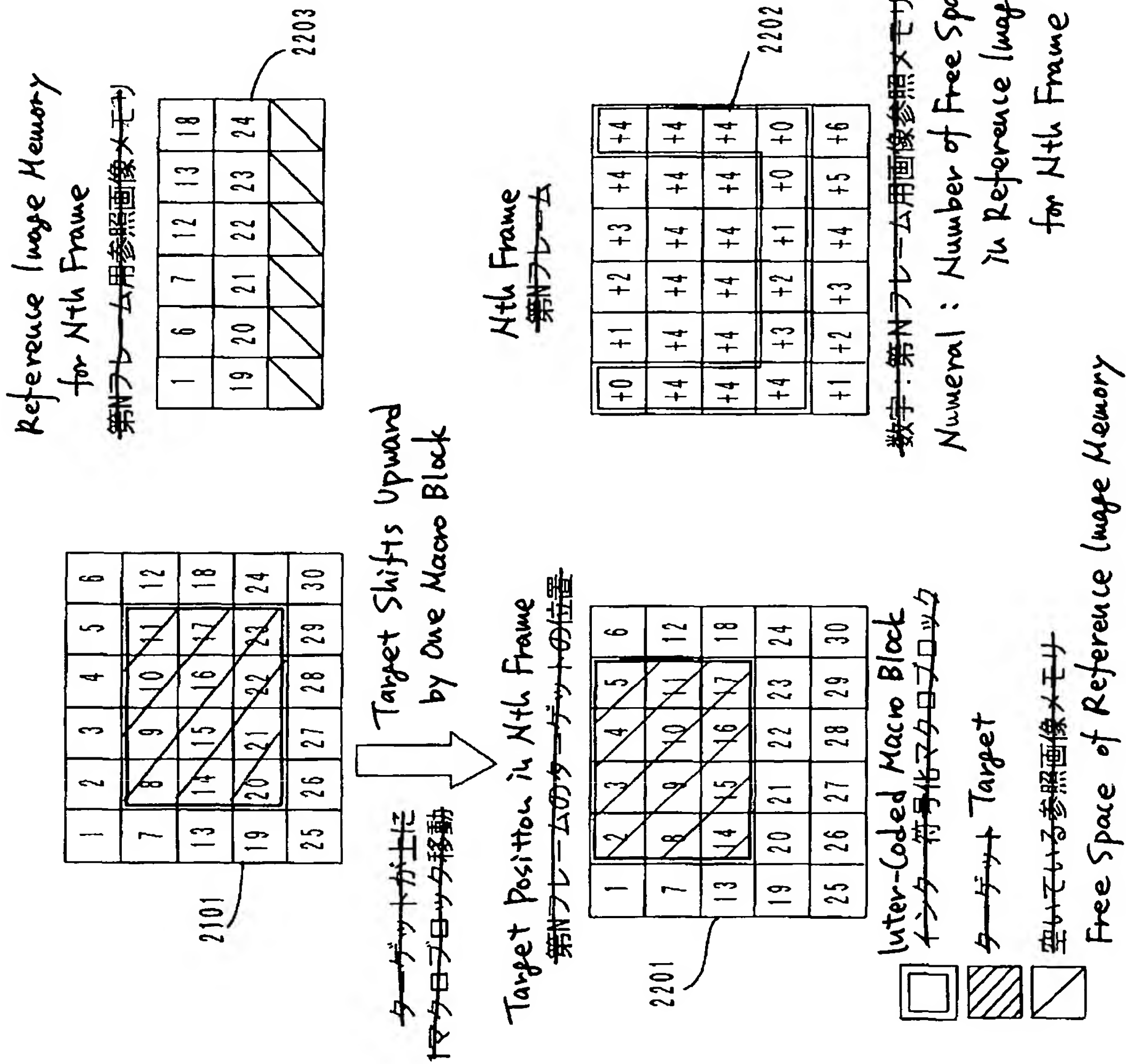


- | | | | |
|-----|------------------|------|----------------------------------|
| 101 | Image Input Unit | 108 | Reference Image Memory |
| 103 | DCT Unit | 111 | Memory Controller |
| 104 | Quantizer | 701 | Macro Block Address Manager |
| 105 | Huffman Encoder | 1301 | Inter Macro Block Number Counter |
| 106 | Dequantizer | | |
| 107 | Reverse DCT Unit | | |

~~図 21~~ Fig. 21



【図22】 Fig. 22



~~図 23~~ Fig. 23

Reference Image Memory
for Nth Frame

~~第Nフレーム用参照画像メモリ~~

2101

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

ターゲットが左に
マクロブロック移動
Target Shifts Leftward
by One Macro Block

Target Position in Nth Frame
~~第Nフレームのターゲットの位置~~

2301

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

Inter-Coded Macro Block
~~インター符号化マクロブロック~~

~~ターゲット~~ Target

~~空いている参照画像メモリ~~

Free Space of Reference Image Memory

数字: 第Nフレーム用画像参照メモリの記録余裕数

Numerical: Number of Free Space
in Reference Image Memory
for Nth Frame

Nth Frame
~~第Nフレーム~~

2302

+0	+0	+0	+0	+0	+1
+2	+2	+2	+2	+1	+2
+3	+3	+3	+3	+2	+3
+4	+4	+4	+4	+3	+4
+4	+4	+4	+4	+4	+5

~~図 24~~ Fig. 24

Reference Image Memory
for Nth Frame

~~第Nフレーム用参照画像メモリ~~

7	8	9	10	11	12
13	18	19	24	25	30

2403

Target Shifts Downward
by One Macro Block

~~ターゲットが下に
マクロブロック移動~~

Target Position in Nth Frame
~~第Nフレームのターゲットの位置~~

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

2401

Inter-Coded Macro Block
~~インター符号化マクロブロック~~

~~ターゲット Target~~

~~空いている参照画像メモリ~~

Free Space of Reference Image Memory

Nth Frame
~~第Nフレーム~~

+1	+2	+3	+4	+5	+6
+6	+5	+4	+3	+2	+2
+2	+2	+2	+2	+2	+2
+2	+2	+2	+2	+2	+2
+2	+3	+4	+5	+6	+6

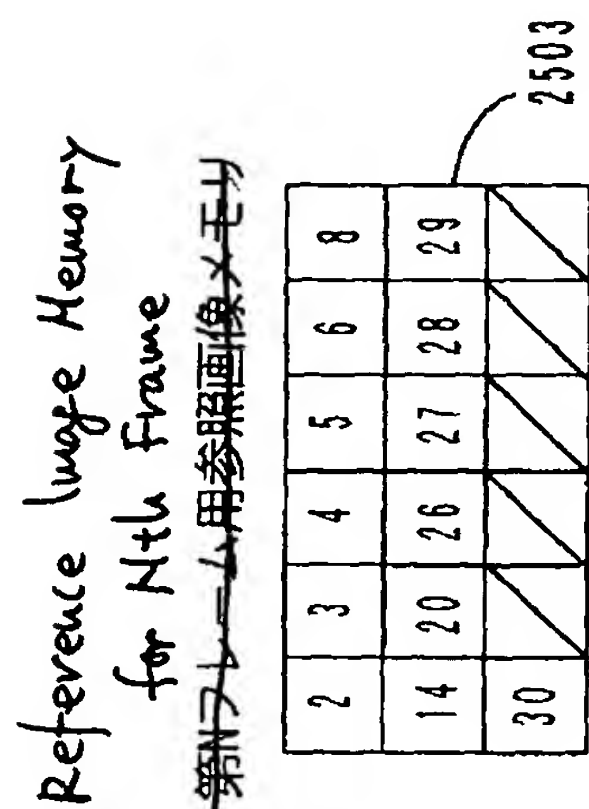
2402

~~数字: 第Nフレーム用画像参照メモリの記録余裕数~~

Numerical: Number of Free Space
in Reference Image Memory
for Nth Frame



~~【图 25】~~ Fig. 25

~~第Nフム用参照画像×毛刀~~

2503

ターゲットが右に
マックス移動
by one Macro Block
Target Shifts Rightward

Target position in Nth Frame
~~第Nフレームのターゲットの位置~~

With Frame

+1	+1	+1	+1	+1	+1	+1
+2	+1	+1	+1	+1	+2	+2
+3	+2	+2	+2	+2	+3	2502
+4	+3	+3	+3	+3	+4	
+4	+4	+4	+4	+4	+4	

2502

~~数字：第Nフレーム用画像参照メモリの記録余裕数~~

Numeral : Number of Free Space
in Reference Image Memory
for Nth Frame

for N th Frame

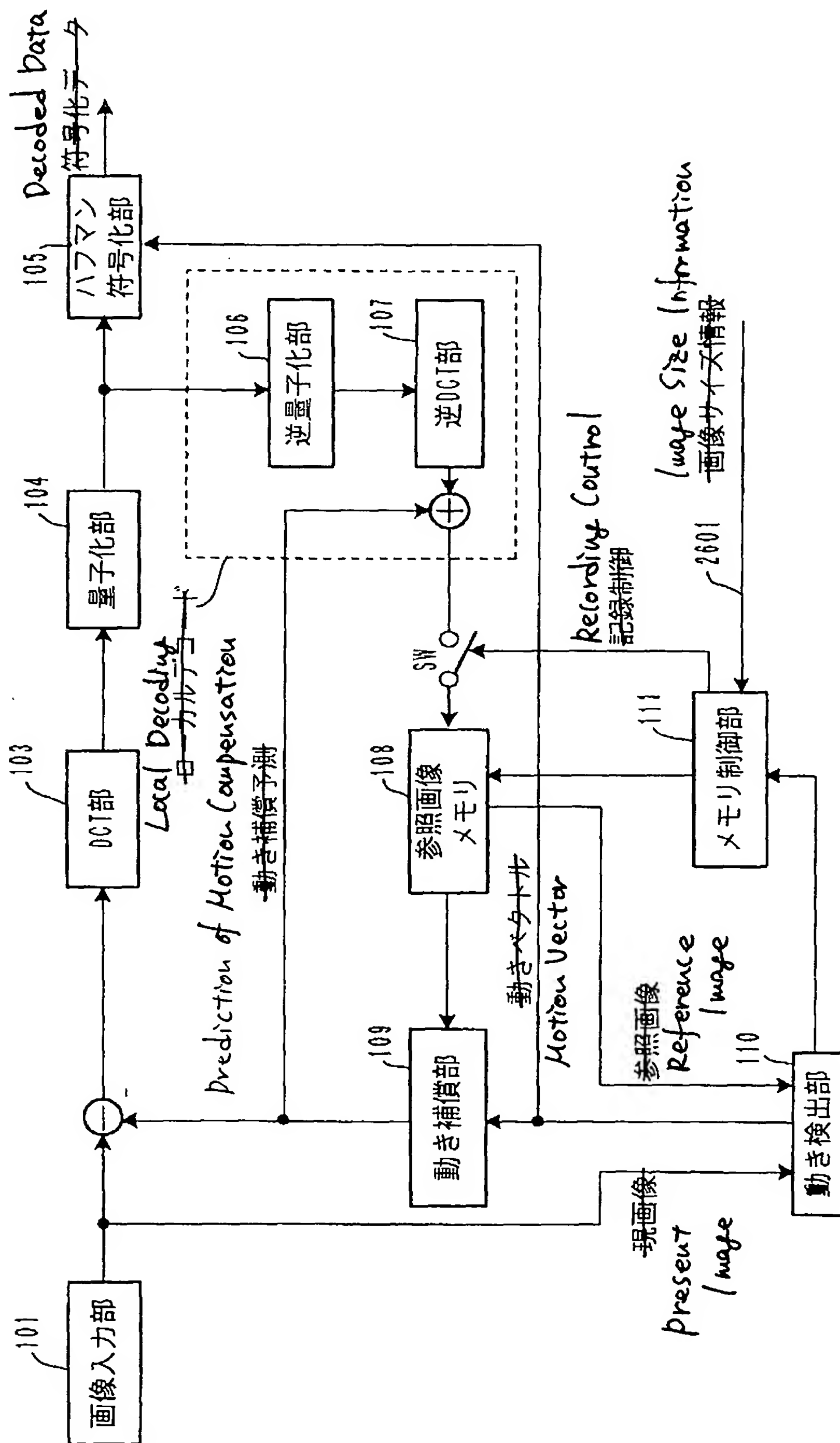
Inter-coded Macro Block
4インタ 符号化マクロブロック

~~ターゲット~~ Target

空いている参照画像です

Free Space of Reference Image Memory

~~(図26)~~ Fig. 26



- | | | | |
|-----|------------------|-----|------------------------|
| 101 | Image Input Unit | 107 | Reverse DCT Unit |
| 103 | DCT Unit | 108 | Reference Image Memory |
| 104 | Quantizer | 109 | Motion Compensator |
| 105 | Huffman Encoder | 110 | Motion Detector |
| 106 | Dequantizer | 111 | Memory Controller |

Fig. 27

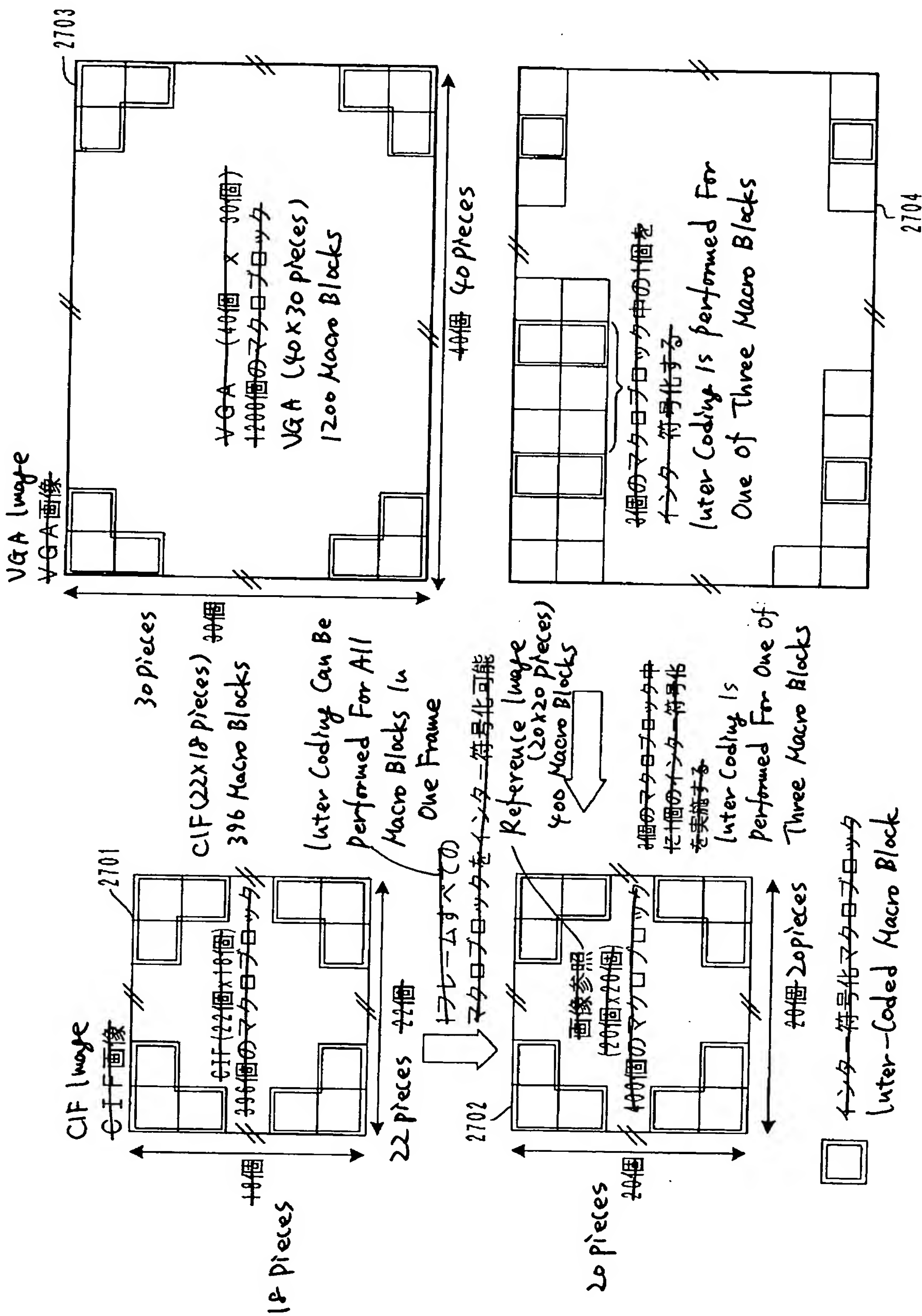
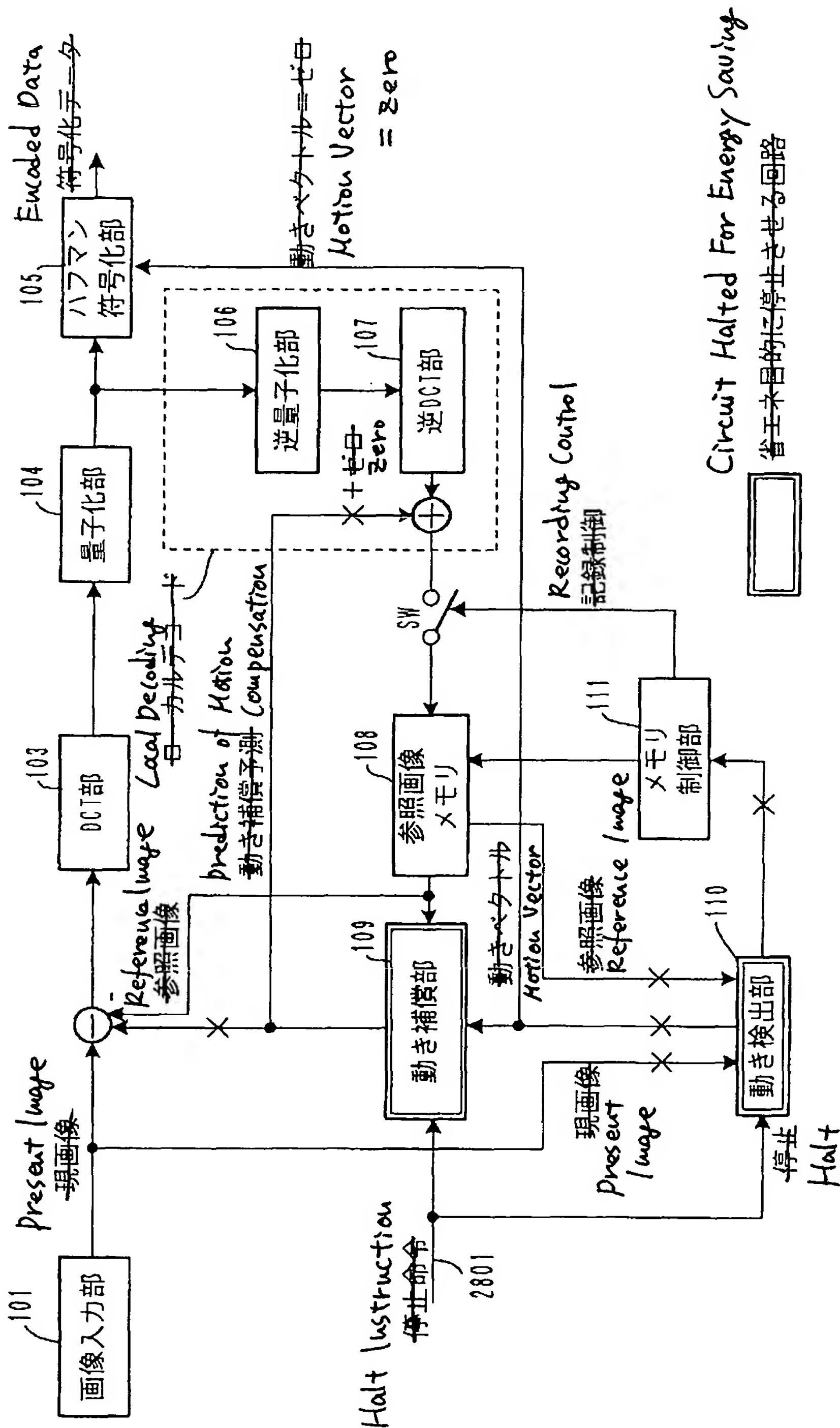
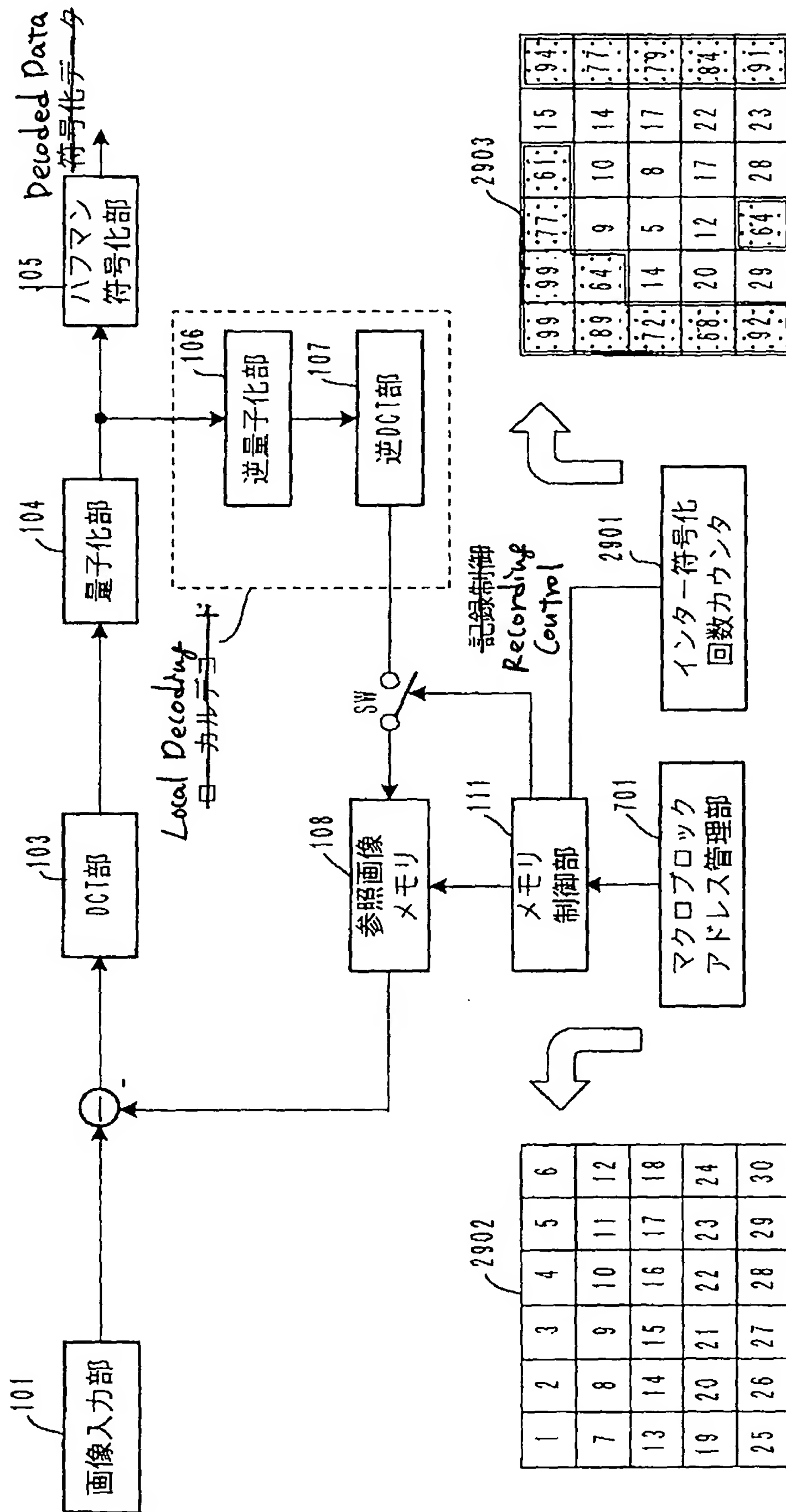


Fig. 28



- | | | | |
|-----|------------------|-----|------------------------|
| 101 | Image Input Unit | 107 | Reverse DCT Unit |
| 103 | DCT Unit | 108 | Reference Image Memory |
| 104 | Quantizer | 109 | Motion Compensator |
| 105 | Huffman Encoder | 110 | Motion Detector |
| 106 | Dequantizer | 111 | Memory Controller |

~~図 20~~ Fig. 29

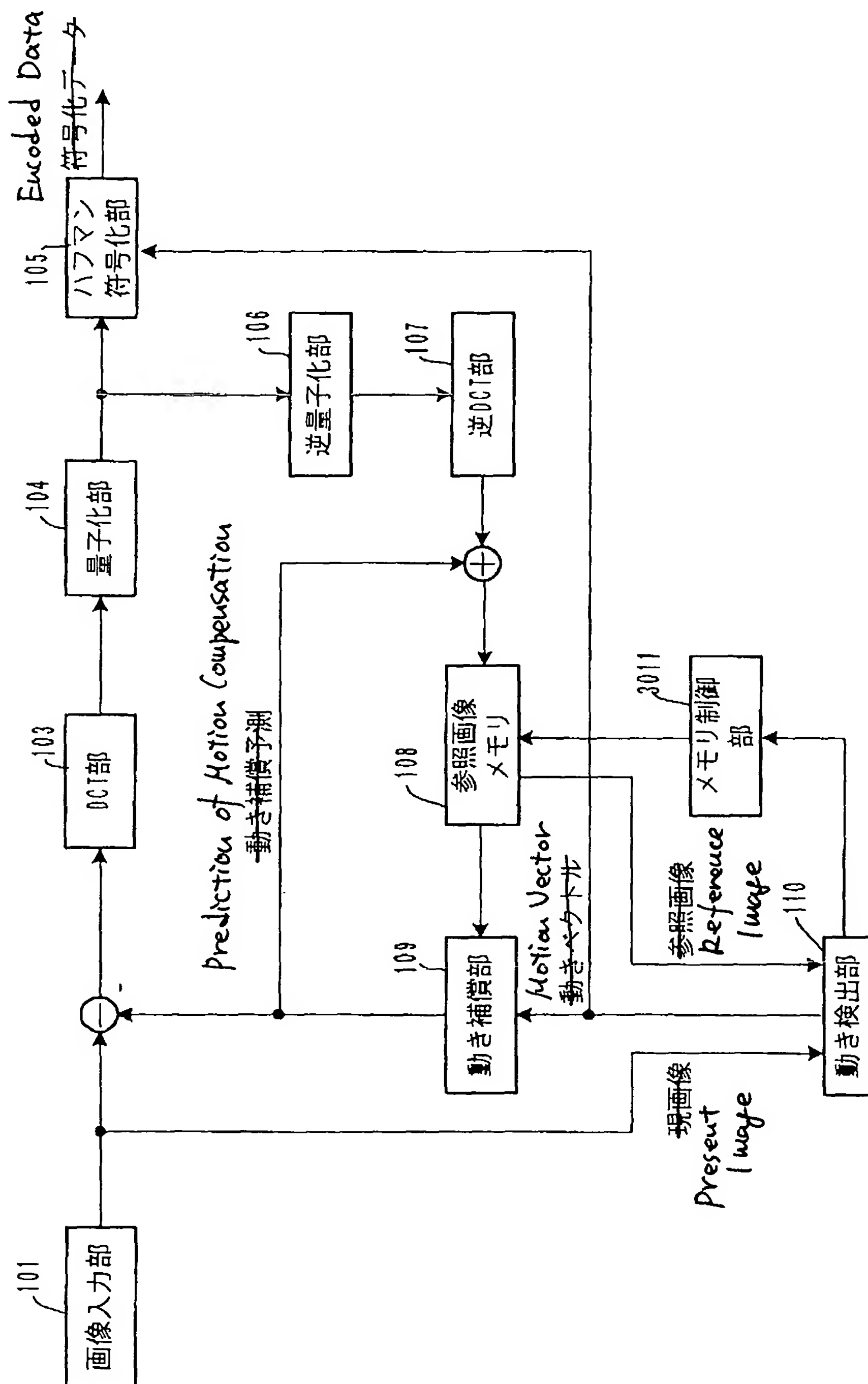


インター符号化するマクロブロック位置 (例15個)
Inter-Coding Macro Block position
(Example (5 pieces))

- 101 Image Input Unit
- 103 DCT Unit
- 104 Quantizer
- 105 Huffman Encoder
- 106 Dequantizer

- 107 Reverse DCT Unit
- 108 Reference Image Memory
- 111 Memory Controller
- 701 Macro Block Address Manager
- 2901 Inter Coding Frequency Counter

~~図 30~~ Fig. 30



- | | | | |
|-----|------------------|------|------------------------|
| 101 | Image Input Unit | 107 | Reverse DCT Unit |
| 103 | DCT Unit | 108 | Reference Image Memory |
| 104 | Quantizer | 109 | Motion Compensator |
| 105 | Huffman Encoder | 110 | Motion Detector |
| 106 | Dequantizer | 3011 | Memory Controller |